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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
JACKSON, BLANE J	
ART UNIT	**PAPER NUMBER**
2618	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/803,763	YAMAZAKI ET AL.
	Examiner	Art Unit
	Blane J. Jackson	2618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,9,11-13, 15-20* is/are rejected.

7)☒ Claim(s) *5,7,8,10 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pehlke et al. (US 2002/0094791) in view of Braathen (US 5,172,071) and Tichauer (US 6,784,744).

As to claim 1, Pehlke teaches a method of detecting linear operation in a power amplifier (Abstract, linearized output control of a power amplifier), the power amplifier being operative to amplify an input signal for transmission, the method comprising the steps of:

Detecting the output signal of the power amplifier, the output signal having been modulated with a base band signal (figures 6 and 9, paragraphs 0031, 0032 and 0041, coupler (621a) to envelope power detection circuit (624a) to detect the modulated output power),

Converting the detected output signal into a digital signal (figure 6, paragraph 0033, A/D converter (632a)),

Comparing the envelope of the detected output signal to the envelope of the *harmonic output signal* (paragraph 0033, detected envelope for the fundamental and harmonic outputs are digitized and compared to in processor (634)),

Decreasing the input power level of the input signal if the difference between the envelope of the detected output signal and the *envelope of the harmonic signal* (paragraph 0033, processor (634) generates a level control signal for the variable gain circuit (636) and the power amplifier (610) based on the comparison of the digital values).

Pehlke teaches a processor to generate a level control signal to the variable gain amplifier based on a comparison of the detected forward and harmonic output power but does not teach decreasing the input power level of the input signal based on the difference between the envelope of the detected and converted output signal and the envelope of the *base band signal*.

Braathen teaches an output control circuit to provide linear control over the output of a power amplifier for continuous or discontinuous RF output signals, figures 1 and 2, column 2, lines 19-56 and column 3, lines 30-46. Braathen discloses the control circuit comprises a first and second sample and hold circuits (90 and 100) to provide aligned samples of the detected envelope of the RF output signal and detected envelope of the input base band signal and coupled to a difference amplifier (110) to generate a difference signal which is supplied to a gain control input of a nonlinear power amplifier (10), column 4, line 8 to column 6, line 20.

Since Braathen, like Pehlke teaches a method to linearize the output of a power amplifier, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the amplifier gain control circuit of Pehlke with the base band sampling means of Braathen such that the amplifier outputs an RF signal which linearly tracks an input base band signal at an assigned output power level.

Pehlke modified does not teach decreasing the input power level of the input signal if the difference between the envelope of the detected and converted output signal and the envelope of the base band signal *is beyond a first threshold level.*

Tichauer teaches a method to save power or reduce distortion in an amplifier circuit where a body conditioning circuit (620) detects changes in the envelope of the input signal to generate a control signal for controlling the bias current of the amplifier, figure 6, column 9, line 58 to column 10, line 23. Tichauer further teaches the body conditioning circuit comprises a threshold detector (621) to detect changes in the envelope of the input signal greater than some predetermined threshold value, the value can be set to different levels depending on the application and design, column 10, lines 5-15. Tichauer further discloses the body conditioning circuit (620) can be implemented using analog, digital or a combination of analog and digital circuits and coupled to like circuits in the system, figure 6, column 10, lines 15-23.

Since Pehlke teaches a control circuit (630) may be implemented with other computing or signal processing operations in addition to the comparing and control operation of the variable gain circuit, paragraph 0034, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the additional

threshold based control circuits of Tichauer in the amplifier control system of Pehlke modified to further detect referenced changes in the difference between the output and base band signals to trigger bias/ gain control of the amplifier(s).

As to claim 2 with respect to claim 1, Braathen of Pehlke modified teaches the step of time aligning the detected and converted output signal with the base band signal (figure 1, column 5, lines 53 to column 6, line 8, the detected input and output signals are alternatively loaded into a first (90) and second sample and hold circuit (100) to hold the two sampled values for subsequent comparison).

As to claim 3, Pehlke teaches the method of claim 1 wherein the input signal is provided to the power amplifier through a variable gain amplifier and the step of decreasing the input power level of the input signal comprises decreasing the gain of the variable gain amplifier (figure 6, paragraph 0033, control circuit (630) provides a level control signal to a variable gain circuit (636) and power amplifier (610)).

As to claim 4 with respect to claim 1, Tichauer of Pehlke modified teaches the step of increasing the input power level of the input signal if the difference between the envelope of the detected and converted signal and the envelope of the base band signal is not beyond a second threshold (column 10, lines 5-12, the predetermined threshold value can be set to different levels depending on the application and design, where in this instance, the threshold would trigger the body conditioning circuit to stop

the increase of input power level to avoid saturating the amplifier (transistor) since the body conditioning circuit tracks the envelope of the input signal).

As to claim 6, Pehlke teaches a circuit for maintaining linear operation of a power amplifier (figure 6, paragraph 0016), the circuit comprising the components of:

A power amplifier (figure 6, (610)), a variable gain amplifier (variable gain circuit (636)), a coupler (directional coupler (621a)), a voltage detector (power detector (624a)) and a processor (634) (figure 6, paragraphs 0031 and 0032),

The power amplifier having a signal input and a signal output (figure 6, power amplifier (610), paragraph 0031),

The variable gain amplifier having a signal input, a signal output and a control input the signal output of the variable gain amplifier being electrically coupled to the signal input of the power amplifier, the signal input of the variable gain amplifier receiving a modulated signal that has been modulated with a base band signal, the control input of the variable gain amplifier being connected to a first control output of the processor (figure 6, variable gain circuit (636) receives level control signal (635) from processor (634), paragraph 0033),

The coupler being electrically coupled to the signal output of the power amplifier and operative, in cooperation with the voltage detector, to detect the envelope of an output signal at the signal output of the power amplifier and provide the detected envelope to a detected signal input of the processor (figures 6 and 9, paragraphs 0031-0034 and 0041, detector circuit (620) includes forward power directional coupler (621a)

and envelope type power detection circuit (624a) to couple a sample of the forward output power to the processor based control circuit (630)),

The processor being operative to:

Receive the detected signal input and compare the detected signal input to the *harmonic signal input* (paragraph 0033), and

Adjust the first control output of the processor to limit the gain of the variable gain amplifier based on the detected signal input and harmonic signal input (paragraph 0033, the respective measured and digitized power levels for the output fundamental and harmonic signals are input to processor (634) to generate a level control signal for the variable gain circuit).

Pehlke teaches a processor to generate a level control signal to the variable gain amplifier based on a comparison of the detected (output) signal input and detected harmonic output signal but does not teach comparing the detected (output) signal input to the base band signal.

Braathen teaches an output control circuit to provide linear control over the output of a power amplifier for continuous or discontinuous RF output signals, figures 1 and 2, column 2, lines 19-56 and column 3, lines 30-46. Braathen discloses the control circuit comprises a first and second sample and hold circuits (90 and 100) to provide aligned samples of the detected envelope of the RF output signal and detected envelope of the input baseband signal and coupled to a difference amplifier (110) to generate a difference signal which is supplied to a gain control input of a nonlinear power amplifier (10), column 4, line 8 to column 6, line 20.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the amplifier control circuit of Pehlke with the base band sampling means of Braathen such that the amplifier outputs an RF signal which linearly tracks an input base band signal at an assigned output power level.

Pehlke modified does not teach limiting the gain of the variable gain amplifier if the detected signal input is beyond a first threshold level in comparison with the base band signal.

Tichauer teaches a method to save power or reduce distortion in an amplifier circuit where a body conditioning circuit (620) detects changes in the envelope of the input signal to generate a control signal for controlling the bias current of the amplifier, figure 6, column 9, line 58 to column 10, line 23. Tichauer further teaches the body conditioning circuit comprises a threshold detector (621) to detects changes in the envelope of the input signal greater than some predetermined threshold value, the value can be set to different levels depending on the application and design, column 10, lines 5-15. Tichauer further discloses the body conditioning circuit (620) can be implemented using analog, digital or a combination of analog and digital circuits and coupled to like circuits in the system, figure 6, column 10, lines 15-23.

Since Pehlke teaches a control circuit (630) may be implemented with other computing or signal processing operations in addition to the comparing and control operation of the variable gain circuit, paragraph 0034, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the additional threshold based control circuits of Tichauer in the amplifier control system of Pehlke

modified to further detect referenced changes in the difference between the output and base band signals to trigger bias/ gain control of the amplifier(s).

As to claim 9 with respect to claim 6, Tichauer of Pehlke modified teaches wherein if the detected signal input is within the first threshold level in comparison with the base band signal, the processor is further operative to maintain the value of the first control output of the processor and thereby maintain the gain of the variable gain amplifier (column 10, lines 3-12, body conditioning circuit (620) generates a control signal to the body voltage of the power transistor (610) when the threshold detector detects changes in the envelope of the input signal greater than some predetermined value).

Claims 11 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pehlke et al. (US 2002/0094791) in view of Braathen (US 5,172,071).

As to claim 11, Pehlke teaches a mobile station for use in a cellular system, the mobile station comprising:

A power amplifier having a signal input received form a variable gain amplifier and a signal output for transmitting through an antenna (figure 1, paragraph 0002 and 0031, variable gain circuit (636) and power amplifier (610)),

A voltage detector coupled to the output of the power amplifier for detecting the output signal and obtaining a detected signal output (figures 6 and 9, paragraphs 0031,

0032 and 0041, envelope-type power detection circuit (624a) to detect forward output power sampled by directional coupler (621a)),

An analog to digital converter electrically coupled to the output of the voltage detector for receiving the detected signal and for converting the detected signal from analog to a digital signal and providing the digital signal to a digital output (figure 6, paragraph 0033, the control circuit (630) includes A/D converter (632a)),

A processor coupled to the digital output of the analog to digital converter for receiving the digital signal, the processor being operative to:

Receive a digitized sample of the harmonic output signal (paragraph 0033, processor (634)),

Correlate the base band signal with the digital signal (paragraph 0033, the digital values for the sampled forward and harmonic digitized values are passed on to processor (634)),

Compare the envelope of the base band signal with the digital signal (paragraph 0033, the processor (634) generates a level control signal based on a comparison of the digital values);

Adjust the gain of the variable gain amplifier in accordance with the results of the comparison (figure 6, paragraph 0033, a level control signal (635) is generated for the variable gain circuit (636)).

Pehlke teaches a processor to generate a level control signal to the variable gain amplifier based on a comparison of the detected (output) signal input and detected

harmonic output signal but does not teach comparing the detected (output) signal input to the base band signal.

Braathen teaches an output control circuit to provide linear control over the output of a power amplifier for continuous or discontinuous RF output signals, figures 1 and 2, column 2, lines 19-56 and column 3, lines 30-46. Braathen discloses the control circuit comprises a first and second sample and hold circuits (90 and 100) to provide aligned samples of the detected envelope of the RF output signal and detected envelope of the input baseband signal and coupled to a difference amplifier (110) to generate a difference signal which is supplied to a gain control input of a nonlinear power amplifier (10), column 4, line 8 to column 6, line 20.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the amplifier control circuit of Pehlke with the base band sampling means of Braathen such that the amplifier outputs an RF signal which linearly tracks an input base band signal at an assigned output power level.

As to claim 20, Pehlke teaches the processor may implement other computing or signal processing operations in addition to the comparing and control operations, paragraph 0033 but does not teach the base band signal is correlated with the digital signal by compensating for timing shift and the amplitude scaling.

Braathen teaches gain control circuits including a difference amplifier (110) which is connected to the outputs of the sample and hold circuits to generated a difference signal form the held first and second sampled output and base band signals where and

amplifier (120) and filter (130) may be connected to the output of the difference amplifier to adjust the level and bandwidth of the output of the difference or gain control signal, figure 1, column 6, lines 5-15.

It would have been obvious to one of ordinary skill in the art at the time of the invention to recognize in the signal processing of Pehlke the signal correlation circuits of Braathen for functionally determining the control circuit to linearize the power amplifier.

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pehlke et al. (US 2002/0094791) in view of Braathen (US 5,172,071) and Tichauer (US 6,784,744).

As to claim 12 with respect to claim 11, Pehlke modified teaches the processor is operative to adjust the gain of the variable gain amplifier based on the comparison of the two digitized signal values, paragraph 0033, but does not teach decreasing the gain if the comparison is beyond a maximum threshold of difference.

Tichauer teaches a method to save power or reduce distortion in an amplifier circuit where a body conditioning circuit (620) detects changes in the envelope of the input signal to generate a control signal for controlling the bias current of the amplifier, figure 6, column 9, line 58 to column 10, line 23. Tichauer further teaches the body conditioning circuit comprises a threshold detector (621) to detect changes in the envelope of the input signal greater than some predetermined threshold value, the value can be set to different levels depending on the application and design, column 10, lines 5-15. Tichauer further discloses the body conditioning circuit (620) can be implemented

using analog, digital or a combination of analog and digital circuits and coupled to like circuits in the system, figure 6, column 10, lines 15-23.

Since Pehlke teaches a control circuit (630) may be implemented with other computing or signal processing operations in addition to the comparing and control operation of the variable gain circuit, paragraph 0034, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the additional threshold based control circuits of Tichauer in the amplifier control system of Pehlke modified to further detect referenced changes in the difference between the output and base band signals to trigger bias/ gain control of the amplifier(s).

As to claim 13 with respect to claim 11, Pehlke modified teaches the processor is operative to adjust the gain of the variable gain amplifier based on the comparison of the two digitized signal values, paragraph 0033, but does not teach increasing the gain if the comparison is beyond a minimum threshold of difference.

Tichauer teaches a method to save power or reduce distortion in an amplifier circuit where a body conditioning circuit (620) detects changes in the envelope of the input signal to generate a control signal for controlling the bias current of the amplifier, figure 6, column 9, line 58 to column 10, line 23. Tichauer further teaches the body conditioning circuit comprises a threshold detector (621) to detects changes in the envelope of the input signal greater than some predetermined threshold value, the value can be set to different levels depending on the application and design, column 10, lines 5-15. Tichauer further discloses the body conditioning circuit (620) can be implemented

using analog, digital or a combination of analog and digital circuits and coupled to like circuits in the system, figure 6, column 10, lines 15-23.

Since Pehlke teaches a control circuit (630) may be implemented with other computing or signal processing operations in addition to the comparing and control operation of the variable gain circuit, paragraph 0034, it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the additional threshold based control circuits of Tichauer in the amplifier control system of Pehlke modified to further detect referenced changes in the difference between the output and base band signals to trigger bias/ gain control of the amplifier(s).

Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pehlke et al. (US 2002/0094791) and Braathen (US 5,172,071) in further view of Hirvilampi (US 6,351,189).

As to claim 15, Pehlke modified teaches the mobile station of claim 11 but does not teach the mobile station further comprising a temperature sensor and the processor is further operative to adjust the gain of the variable gain amplifier in accordance with the comparison and the temperature reading of the sensor.

Hirvilampi teaches a method for auto-biasing an amplifier comprising an auto-bias feedback loop that continuously adjusts the bias condition of an amplifier to a wanted state during amplifier operation by monitoring the operating state of the amplifier and controlling the amplifier bias so as to control the amplifier operating point sufficiently to compensate for variations in amplifier electrical characteristics, amplifier load,

amplifier temperature, input signals and the modulation scheme used, column 2, lines 25-46. Hirvilampi teaches in operation, a measurement device measure an operating parameter of the amplifier, a voltage, current or temperature and conveys the bias level metric to control device (322) in response to variations in the bias level metric, figures 3 and 4, column 5, lines 43-65. Hirvilampi discloses an example of a measurement device (320) comprises a sensing resistor (R41) coupled to power supply (316) to provide a voltage drop corresponding to the magnitude of the current where the directly sensed voltage and indirectly sensed current sourced by the power supply is coupled to control device (322) for subsequent adjustment to the bias control of the amplifier, figure 4, column 7, lines 34-60.

Since Hirvilampi teaches alternative methods to monitor and self bias a power amplifier with application to mobile telephones, column 1, lines 10-22, it would have been obvious to one of ordinary skill at the time of the invention to modify the amplifier control system of Pehlke modified with any one or a combination of the bias level metrics of Hirvilampi to control the amplifier operating point sufficiently to compensate for variations in the amplifier electrical characteristics and amplifier temperature.

As to claims 16 and 18 with respect to claims 15 and 11, Pehlke modified does not teach the mobile station further comprising a voltage sensor for measuring the voltage level of a source providing power to the mobile station and the processor is further operative to adjust the gain of the variable gain amplifier in accordance with the

comparison, the temperature reading of the sensor and the level reading of the voltage sensor.

Hirvilampi teaches a method for auto-biasing an amplifier comprising an auto-bias feedback loop that continuously adjusts the bias condition of an amplifier to a wanted state during amplifier operation by monitoring the operating state of the amplifier and controlling the amplifier bias so as to control the amplifier operating point sufficiently to compensate for variations in amplifier electrical characteristics, amplifier load, amplifier temperature, input signals and the modulation scheme used, column 2, lines 25-46. Hirvilampi teaches in operation, a measurement device measure an operating parameter of the amplifier, a voltage, current or temperature and conveys the bias level metric to control device (322) in response to variations in the bias level metric, figures 3 and 4, column 5, lines 43-65. Hirvilampi discloses a measurement device (320) comprises a sensing resistor (R41) coupled to power supply (316) to provide a voltage drop corresponding to the magnitude of the current where the directly sensed voltage and indirectly sensed current sourced by the power supply is coupled to control device (322) for subsequent adjustment to the bias control of the amplifier, figure 4, column 7, lines 34-60.

Since Hirvilampi teaches alternative methods to monitor and self bias a power amplifier with application to mobile telephones, column 1, lines 10-22, it would have been obvious to one of ordinary skill at the time of the invention to modify the amplifier control system of Pehlke modified with any one or a combination of the bias level

metrics of Hirvilampi to control the amplifier operating point sufficiently to compensate for variations in the amplifier electrical characteristics.

As to claim 17 with respect to claim 16 and claim 19 with respect to claim 11, Pehlke teaches the mobile station further comprising a reverse power detector for detecting a voltage standing wave ratio and the processor is further operative to adjust the gain of the variable gain amplifier in accordance with the comparison, the temperature reading of the sensor, the level reading of the voltage sensor and the voltage standing wave ratio (figure 6, paragraphs 0031-0034, directional coupler (621a), power detector (624b) and A/D converter (632b, and the processor may implement other computing or signal processing operation in addition to the comparing and control operations to control the variable gain circuit (636)).

Allowable Subject Matter

Claims 5, 7, 8, 10 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 5, the prior art made of record does not teach the step of maintaining the input power level if the difference between the envelope of the detected signal input (power output) signal and the base band signal is between the (defined) second and a first threshold level.

As to claims 7 and 8, the prior art made of record does not teach the processor is further operative to increase the gain of the variable gain amplifier based on the output power below a target threshold in comparison to the detected signal input is within a second threshold level.

As to claim 10, the prior art made of record does not teach the processor is further operative to change the bias of the power amplifier if the detected signal input is beyond a first threshold level and within a second threshold level.

As to claim 14, the prior art made of record does not teach the processor is further operative to maintain the gain of the variable gain amplifier if the comparison is between the minimum threshold and maximum threshold difference.

Conclusion

The prior art made of record and not relied upon but considered pertinent to applicant's disclosure includes: Quilisch et al. (US 7,068,985), Jin et al. (US 6,449,466), Cova (US 2002/0171485), Sundstorm (US 2002/0171484), Takano et al. (US 2004/0198257), Miyake (US 5,732,334) and Eriksson (US 6,262,630).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J. Jackson whose telephone number is (571) 272-7890. The examiner can normally be reached on Monday through Friday, 8:30 AM-6:00 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Blane J. Jackson